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ABSTRACT

This report presents three studies which investigated the two major problem areas in developing a State system of managed research in vocational education: (1) identifying persons who are interested in and competent to conduct research and development activities, and (2) identifying and placing in priority order the significant problems in the field of vocational education. Approximately 5,000 persons in Minnesota who had some professional responsibility for vocational and practical arts education were surveyed as potential resource personnel. Findings indicated that 894 persons of various competency levels were interested in ongoing in research activities. The other two studies were designed to identify research priorities in Minnesota through two statewide surveys. The first attempted to classify and rank order problem areas. The second was conducted one year later to determine whether various groups of practitioners differed with respect to their research priorities. It was found that respondents classified by educational employment and responsibility did not differ significantly but that those interested in research did have different priorities than persons without previous expressed research interests. It was concluded that a composite list of research priorities based on a large number of practitioner responses may be developed for a State. (MF)

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ED 079497

Developing a State System of Managed Research and Development Activities in Vocational Education

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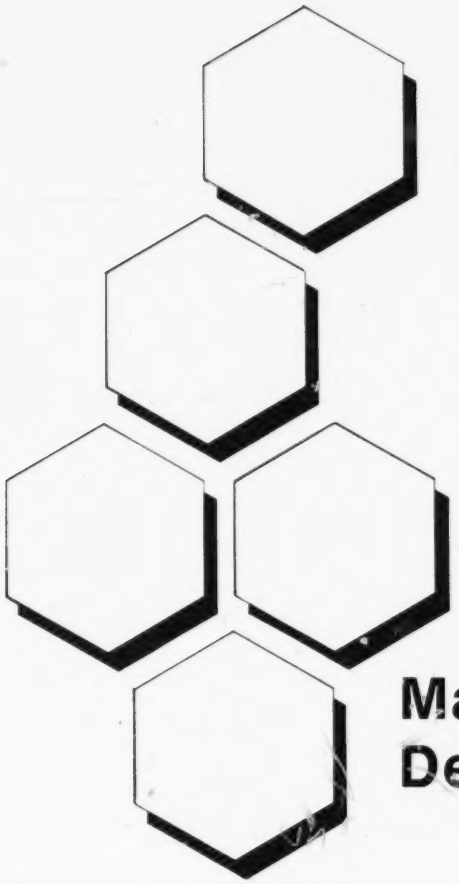

Developing a State System of **Managed Research and Development Activities** in Vocational Education

Brandon B. Smith and
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TOWARDS A SYSTEM OF MANAGED RESEARCH AND DEVELOPMENT

Brandon B. Smith and Jerome Moss Jr.

INTRODUCTION

The availability of relatively large amounts of federal funds for conducting research in vocational education has made it necessary for states to seek new ways to effectively and efficiently manage R & D efforts. Until the Vocational Amendments of 1968, all of the funds allocated for research were controlled by the U.S. Office of Education; states could obtain funds only as individuals wished to submit proposals dealing with high priority problems identified by the federal office. Now, states receive and administer federally appropriated dollars for conducting a wide range of research-related activities which are designed to improve the quality and quantity of vocational education programs in the state. This change has necessitated the development of managed research programs within states.

Assuming that an adequate amount of federal research funds are available, the two major problems in developing a state system of managed research are (a) identifying persons in the state who are interested in and competent to conduct research and/or development activities, and (b) identifying and placing in priority order the significant problems in the field of vocational-technical education. The purpose of this report is to present and discuss the findings of three separate studies which investigated these two problem areas. These three studies represent steps in the process of developing a system of managed research for Minnesota.

SUMMARY AND FINDINGS

The first study dealt with the problem of identifying persons in the state who are interested in and competent to conduct a wide range of research and development activities. A population of about 5000 persons who had some professional responsibility for vocational or practical arts education in the state were sent a questionnaire asking them to (a) indicate their research interests, and (b) provide information about their preparation for and experience in conducting research and/or development activities. An internally consistent weighting scheme was used to classify respondents' competencies for conducting research and/or development projects. The following conclusions were drawn: (a) There is a relatively large group of persons in the state (894) who are interested in engaging in some type of research-related activity, (b) the general competency level of persons who expressed interest in conducting either research or development projects is quite low, (c) educators employed in either colleges or senior high schools seem to possess both the greatest interest in and most competence for conducting research and development activities, and

(d) a surprisingly large portion of educators who expressed an interest in research have experience in obtaining funds for research and/or development activities.

The last two studies in the series were designed to identify research priorities in the state. Typically priorities are established for a state by obtaining and then rank ordering the opinions of various state advisory committees. This method may not accurately assess all the needs of the profession since it frequently does not adequately reflect the ideas and opinions of educators responsible for the actual operation of local programs. Also, since the membership of advisory committees tends to change each year, the priorities are often too unstable to justify the development of programmatic plans for research. The staff of the Minnesota Research Coordinating Unit for Vocational Education therefore conducted two statewide surveys in an attempt to identify the research and development needs expressed by program operators.

The first study attempted to identify and rank order problem areas classified as either (a) research or development activities, and (b) dealing with disadvantaged or non-disadvantaged students. The results of this study, together with the inputs of persons representing various state and local vocational education agencies, were instrumental in the development of a set of long-range research priorities for the state utilized in fiscal year 1971.

The second study pertaining to research priorities was conducted one year later and was concerned with determining whether various groups of practitioners differed with respect to their research priorities. The population, identified as persons who had some professional responsibility for vocational or practical arts education in Minnesota, was stratified and sampled according to their (a) level of educational employment, (b) educational responsibility, and (c) research interest. The results of this study indicated that (a) respondents classified by nature of their employment and responsibility did not differ significantly in their perception of research priorities, but (b) respondents interested in research have different research priorities than persons who had not previously expressed an interest in research, and (c) it is possible to develop a composite list of research priorities for a state based on the responses of a large number of practitioner groups.

ASSESSING THE HUMAN RESOURCES FOR CONDUCTING RESEARCH AND DEVELOPMENT ACTIVITIES IN MINNESOTA

Brandon B. Smith and Charles C. Kiefer

THE PROBLEM

Traditionally, most of the research conducted in a state has been done by persons employed in institutions of higher education; it was presumed that they had both the necessary competencies and the facilities. Although it is important to encourage the staff and graduate students in institutions of higher education to engage in research activities, it is equally important to encourage persons who are responsible for operating local vocational programs to become interested in conducting research and/or acquiring further research training. The involvement of local program operators in research will enhance the likelihood that the results of research and development activities will be implemented and will have both an immediate and long-range impact on the quality of vocational education programs in the state.

Objectives

The purpose of the study was to assess the human resources potential for conducting research and development activities in the state by surveying groups of educators who have some professional responsibility in the fields of vocational and practical arts education, or who may be interested in conducting research in this area. The specific questions to be answered by the study were:

1. Who are the persons in the population interested in conducting, or acquiring further training in the conduct of, research and/or development activities in vocational education?

2. What relevant competencies are possessed by persons in the population who express such interests?

3. Do persons in the population who express an interest in conducting, or acquiring further training in the conduct of, research and/or development activities have experience in writing research or developmental proposals and getting them funded?

The methodology for the study was dependent upon (a) identifying a population of persons in the state who may be interested in conducting research and/or development activities in the field of vocational education and (b) developing an instrument to assess the nature and extent of their relevant competencies.

Definitions

Interest in research and/or development was defined as a response (completed and returned) to the mailed questionnaire; lack of interest was defined as a non-response. Persons in the population received a business reply card questionnaire and were asked to express the extent of their interest by indicating whether they wished to either conduct or acquire further training in (a) research, (b) development, or (c) research and development.

Competency for engaging in research and/or development activities was defined in terms of the total amount of relevant formal and informal research and/or development experiences possessed by a respondent. Formal experience was considered as the total amount of supervised research-related experiences or coursework obtained while attending an institution of higher education. Informal experience was defined as the total amount of experience a person had in either conducting, writing proposals for, or participating in research or development activities.

Population

The population surveyed consisted of 5081 administrators, teachers, counselors, coordinators and supervisors of vocational or practical arts programs in Minnesota, in either public or private junior high, senior high, post-secondary, or collegiate institutions, together with persons who operated special programs for the disadvantaged and handicapped, during the 1969-70 academic school year. The population included educators employed in the following occupational areas: trade and industry, business, agriculture, distributive and home economics education and counseling. Also included were 290 graduate faculty representing the behavioral sciences in seven departments of the University of Minnesota and its branches. Excluded from this population were persons who were employed by various federal agencies or persons who were operating training programs in business and industry in the state. The mailing list maintained by the Minnesota RCU, together with the graduate faculty handbook published by the University of Minnesota, were used to identify the names of the 5081 persons in the population.

Administration of Questionnaire

In light of the definition that a response to the questionnaire indicated an interest in research and no response indicated a lack of interest, one mailing of the questionnaire without follow-up was used. Provisions were made to have questionnaires forwarded to respondents in the event that individuals had changed their address.

The contents of the mailing included a cover letter explaining the purpose of the study and a printed, self-addressed, business reply card questionnaire (Appendix A) asking individuals to provide biographical information and information about their interest in and formal and informal experiences with research and/or development activities. All recipients were encouraged to complete and return the questionnaire to the Minnesota RCU if they were interested in

conducting, or acquiring further training in the conduct of, research and/or development activities in vocational education. A special letter, asking only about their interest in research and development activities, was sent to the persons in the population employed at the University of Minnesota or its branches.

Determining Level of Competence

A group of experienced researchers and advanced graduate research fellows employed by the Minnesota RCU developed a subjective, internally consistent, weighting scheme to assess the competencies of respondents to the questionnaire. Each respondent received a score on (a) amount of formal academic preparation in research or development activities, (b) amount of experience in conducting either research or developmental projects, and (c) the recency of the last research-related experience. Competencies were assessed separately for research and development activities with formal preparation accounting for about thirty-eight percent of the total competency score and informal preparation and recency accounting for the remaining sixty-two percent.

The formal academic experiences, together with the relative weights as they relate to competencies for research (R) and development (D), are listed below. The maximun number of points a respondent could receive for either research or development was twenty-seven (27).

R	D		R	D	
(5)	(1)	Inferential Statistics	(1)	(3)	Developmental Project Internship Development
(3)	(2)	Research Methods			
(2)	(2)	Descriptive Statistics	(2)	(3)	Principles-Theory of Curriculum
(3)	(1)	Research Fellow-Assistant	(1)	(3)	Programmed Instruction
(2)	(1)	Research Institute-Seminar	(1)	(3)	Computer Assisted Instruction
			(1)	(2)	Developmental Seminar-Institute

Highest Degree Held: (0) No Degree (1) Bachelors (2) Bachelors Plus (3) Masters (4) Masters Plus (6) Doctorate

A similar weighting scheme was developed to assess the amount of practical experience possessed by respondents as it related separately to research and development activities. Respondents were asked about (a) the number of studies they had conducted, (b) the number of proposals they had written and the number for which they had received funds, (c) the number of conferences or workshops in which they had participated, and (d) the recency of their last research-related experience. The items and weights associated with each of the above kinds of information were the same for assessing both research and development competencies.

A. Total Number of Studies Conducted:
(0) None (6) One (14) 2-4 (24) 5 or more

B. Number of Proposals Written
(0) None (2) One (6) 3 or more

Number Funded
(0) None (3) 1-2 (6) 3 or more

C. Number of conferences, institutes or workshops in which you have participated:
(0) None (2) One (6) 2-4 (10) 5 or more

D. Recency of last research-related activity:
(0) Before 1960 (2) 1960-65 (4) After 1965

Coding and Analyzing Responses

As responses were received, each item on the questionnaire was scored according to its predetermined weight. A composite score was obtained separately for individuals on research and development by adding the scores for formal research preparation to the scores for informal research and development experiences, respectively. Based on the composite score for research and/or development, respondents were then classified into one of three competence levels: (1) "adequate" was defined as respondents who received a composite score of 31 points or more; (2) "limited" was defined as respondents who received between 19-30 points; (3) "inadequate" was defined as respondents who received 18 or less points. Descriptive statistics, presented in table form, were used to analyze the data in the study as they relate to each of the objectives.

The name and address of each respondent, together with codes indicating area of interest and competence in research and/or development, were punched on computer cards. It was expected that these cards would facilitate identifying competent research and development personnel and mailing relevant information to them.

FINDINGS

The findings of the study are presented in terms of the three previously stated objectives.

Objective #1: Who are the persons in the population interested in conducting, or acquiring further training in the conduct of, research and/or development activities in vocational education?

Table 1 shows the number and percent of persons who expressed an interest in conducting research and/or development projects and in acquiring further research training. Data are summarized separately according to the respondents' level of educational employment and educational responsibility.

Table 1 shows that of the 5081 persons in the population, 894 persons expressed an interest in conducting, or acquiring further training in the conduct of, research and/or development activities. Stated another way, only 17.6% of the population surveyed expressed an interest in participating in some kind of research-related activity. The largest number of responses was received from educators employed in the senior high schools; the smallest number of responses was received from persons employed at junior high schools. In terms of educational responsibility, "teachers' seem to be the group with the greatest number of individuals interested in engaging in some type of research-related activity.

Table 1

NUMBER AND PERCENT OF PERSONS EXPRESSING AN INTEREST IN CONDUCTING OR ACQUIRING TRAINING IN RESEARCH AND DEVELOPMENT ACTIVITIES BY EDUCATIONAL LEVEL AND RESPONSIBILITY

	Educational Level				Educational Responsibility				
Interest	College and University	Post-Sec.	Sr. High	Jr. High	Teachers	Counselors	Admin.	Total Returns	% of Returns
Research	41	3	18	4	47	10	9	66	7.4%
Development	5	7	30	8	44	2	4	50	5.6%
Research and Development	71	15	65	11	127	22	15	164	18.3%
Training	32	78	439	67	401	164	49	614	68.7%
Number of Returns	149	103	552	90	619	198	77	894	100.0%
Number Sent	531	647	2978	925	3218	778	1088	5081	100.0%
Percent Return	28.1%	15.9%	18.5%	9.7%	19.2%	25.5%	7.1%		

However, the group with the greatest percent of interest were college and university faculty and counselors.

Probably the most important data presented in Table 1 pertains to the type of research-related activities in which respondents wish to engage. Almost seventy percent (68.7%) of the respondents expressed an interest in acquiring further research training, about eighteen percent (18%) were interested in conducting both research and development activities, while only small percentages wanted to conduct research (7.4%) or developmental (5.6%) activities. This finding suggests that a majority of the respondents did not feel they were adequately prepared to engage in the conduct of either research or developmental activities.

Objective #2: What relevant competencies are possessed by persons in the population who express such interests?

Table 2 presents the number and percent of persons possessing competencies for conducting research and/or development activities categorized by (a) competency level, (b) educational level, and (c) educational responsibility. Since the competencies of the graduate faculty members of the University of Minnesota were not assessed in the same manner as educators employed in other institutions, they were omitted from Table 2 and its analysis.

A total of 807 persons indicated they had some competence for conducting research activities. Eighty-seven respondents reported no competence. Of the 807, about sixty percent (60.2%) were judged to have inadequate competencies, about twenty-six percent (26.2%) had limited competencies, and only about fourteen percent (13.6%) had adequate research competencies. An inspection of the data according to educational level and responsibility reveals that the largest number of persons who possess adequate research competencies were teachers and educators employed in senior high schools.

A total of 775 persons of the 894 respondents indicated they had some degree of competency for conducting developmental projects. About seventy-three percent (72.6%) had inadequate competencies, about eighteen percent (18.2%) had limited competencies, and only about nine percent (9.2%) had adequate competencies for conducting developmental projects. By far the largest number of persons possessing adequate competency for conducting developmental projects were teachers and educators employed in senior high schools.

Objective #3: Do persons in the population who expressed an interest in conducting or acquiring further training in the conduct of research and/or developmental activities have experience in writing proposals and getting them funded?

Table 3 shows the number of research and developmental proposals which various groups of educators have written, together with the number of persons who wrote them and the percent which had been funded. Data are summarized according to the respondents' level of educational employment and educational responsibility. The (N) in Table 3 stands for the number of individuals who submitted proposals.

Table 2

COMPETENCY LEVELS OF RESPONDENTS WHO REPORTED SOME BACKGROUND FOR CONDUCTING RESEARCH AND/OR DEVELOPMENT ACTIVITIES

	Educational Level				Educational Responsibility				
Competency Level	College	Post-Sec.	Sr. High	Jr. High	Teachers	Counselors	Admin.	Total	Percent
RESEARCH									
Adequate	22	17	63	8	56	45	9	110	13.6%
Limited	16	19	155	21	103	84	24	211	26.2%
Inadequate	20	64	345	57	377	81	28	486	60.2%
TOTAL	58	100	563	86	536	210	61	807	100.0%
DEVELOPMENT									
Adequate	22	14	28	7	44	19	8	71	9.2%
Limited	11	16	107	7	86	37	18	141	18.2%
Inadequate	22	70	399	72	391	132	40	563	72.6%
TOTAL	55	100	534	86	521	188	66	775	100.0%

Table 3

NUMBER AND PERCENT OF PERSONS EXPRESSING AN INTEREST IN CONDUCTING OR ACQUIRING TRAINING IN RESEARCH AND DEVELOPMENT WHO HAVE WRITTEN AND HAD PROPOSALS FUNDED BY EDUCATIONAL LEVEL AND RESPONSIBILITY

	Educational Level					Educational Responsibility			
	College	Post-Sec.	Sr. High	Jr. High	Total	Teachers	Counselors	Admin.	Total
RESEARCH	N=25	N=15	N=62	N=9	N=111	N=66	N=38	N=7	N=111
Number written	62	23	100	17	202	128	56	18	202
Number funded	46	9	23	0	78	57	11	10	78
Percent Funded	74.2%	39.1%	23%	0%	38.6%	44.5%	19.6%	55.6%	38.6%
DEVELOPMENT	N=18	N=8	N=74	N=10	N=110	N=65	N=34	N=11	N=110
Number written	30	16	105	20	171	104	42	25	171
Number funded	14	4	34	6	58	27	15	16	58
Percent Funded	46.7%	25%	32.4%	30%	33.9%	26%	33.7%	64%	33.9%
RESEARCH AND DEVELOPMENT	N=43	N=23	N=136	N=19	N=221	N=131	N=72	N=18	N=221
Total proposals written	92	39	205	37	373	232	98	43	373
Total proposals funded	60	13	57	6	136	84	26	26	136
Percent Funded	65.2%	33.3%	27.8%	16.2%	36.5%	36.2%	26.5%	60.5%	36.5%

Table 3 shows that the respondents have had considerable experience in writing research and development proposals. A group of 111 persons wrote 202 research proposals and a similar size group wrote 171 developmental proposals. As groups, they were successful in getting about thirty-nine percent (38.6%) of the research proposals funded and about thirty-four percent (33.9%) of the developmental proposals funded.

It appears that while the greatest number of both research and development proposals were written by educators employed at the senior high school level, educators employed in colleges were most successful in getting their proposals funded. Teachers wrote and secured funding for more research and development proposals than other groups of educators, but administrators had a higher percentage of successes.

CONCLUSIONS AND DISCUSSION

The findings are limited by the way persons interested in research and/or development were defined and by the way in which the competencies of respondents were measured and weighted. There may be other educators in the population who are both interested in and competent to conduct research and/or development projects, but for some reason they did not return the questionnaire and were therefore not included in the findings. However, based on the data received, the following conclusions seem warranted:

1. <u>There is a relatively large number of persons in the State who are interested in engaging in various types of research-related activities</u>.

A total of 894 persons indicated that they wished to either conduct research and/or developmental projects or acquire further research training. A large majority (70%) of these respondents wanted to acquire further training before they conduct either research or developmental activities.

2. <u>The present general level of competency of persons who expressed an interest in conducting research and/or development projects or in acquiring further training is relatively low</u>.

There are two indicators which suggest the conclusion. First a large majority of the respondents recognize their lack of competencies by expressing a desire to acquire further training. Second, in assessing the competencies possessed by the respondents, only a small percent were judged to have adequate competencies for conducting research (13.6%) or development (9.2%) activities. Suggested training activities might include: (a) developing formal courses (classes) in research, (b) conducting research institutes or workshops, (c) sponsoring conferences dealing with research and/or development activities, (d) developing self-instruction research training materials, or (e) providing technical consultation to interested persons.

3. <u>The bulk of the persons interested in and adequately prepared to conduct research and development activities are (a) employed in colleges and senior high schools, and (b) are teachers</u>.

4. Persons who expressed an interest in research and/or development activities have had considerable experience in writing proposals and obtaining funds to support those proposals.

The most successful groups of educators in obtaining funds for research and development projects have been educators employed at the college level; their emphasis upon research, however, was greater than their emphasis upon development. Personnel at the senior high school level appear to present a good resource for developmental efforts. Findings suggest that personnel in the state are willing to put their research-related ideas on paper; this provides a basis for considering the operation of an unsolicited (as well as a solicited) research and development program in the state.

Appendix A

BUSINESS REPLY CARD QUESTIONNAIRE

After Reading the Cover Letter Complete Appropriate Items

Name_____ Place of Employment_____
(Last) (First)

Address_____ Employment Responsibility_____

Directions: Complete Sections I, II, V, and VI, and then complete Research Section III and/or Developmental Section IV, depending upon your area(s) of interest.

I. I am interested in ☐ conducting and/or ☐ acquiring further training in: (check appropriate boxes)

☐ Research ☐ Development ☐ Research and Development

II. ACADEMIC PREPARATION: Check the appropriate formal education experiences (courses) you have had:

☐ Inferential Statistics
☐ Research Methods
☐ Descriptive Statistics
☐ Research Fellow-Assistant
☐ Research Institutes-Seminars
☐ Developmental Project Internship
☐ Principles-Theory of Curriculum Development
☐ Programmed Instruction
☐ Computer Assisted Instruction
☐ Developmental Seminars-Institutes

Highest Degree Held: ☐ No Degree ☐ Bachelors ☐ Bachelors plus ☐ Masters ☐ Masters plus ☐ Doctorate

Institution from which highest degree was granted and date of graduation:

Institution_____ Year_____

III. RESEARCH EXPERIENCE: (Check appropriate boxes)

Total number of research studies, requiring collection of original data, you have completed or are completing. (Include degree fulfilling studies)

☐ None ☐ One ☐ 2-4 ☐ 5 or more

Number of research proposals you have written and which have been funded by an outside agency. No. written_____ No. funded_____

Number of research conferences, institutes or workshops in which you have participated.

☐ None ☐ One ☐ 2-4 ☐ 5 or more

IV. DEVELOPMENTAL EXPERIENCE: (check appropriate boxes)

Number of developmental projects which you conducted or in which you have assisted. (Include degree fulfilling projects)

☐ None ☐ One ☐ 2-4 ☐ 5 or more

Number of developmental proposals you have written and the number which have been funded by an outside agency.

No. written_____ No. funded_____

Number of institutes, conferences, or workshops you have attended which dealt with developmental projects.

☐ None ☐ One ☐ 2-4 ☐ 5 or more

(Continued on Reverse Side)

Appendix A (continued)

V. RECENCY of last research study, developmental project or formal course work in research-development.

☐ Before 1960 ☐ 1960-65 ☐ After 1965

VI. List the research and/or developmental projects you have completed since 1967 (list also degree fulfilling studies)

Title	Date	Copy Available	
		Yes	No

(Use additional space if necessary)

FOLD, STAPLE AND MAIL

RESEARCH PRIORITIES FOR VOCATIONAL EDUCATION: 1970-71

William E. Stock and Paul E. Schroeder

THE STUDY

The operation of a state system designed to administer programmatic research and developmental activities demands the determination of priorities which will provide direction to the system. Priorities, when established, provide a logical means for selecting among viable alternatives for distributing funds among research-related activities.

The purposes of this study were to ascertain the nature of the research and development needs in the state, as perceived by practitioners. The results, in turn, were to be used as one source of input for establishing priorities in the state. Input from practitioners was believed to be essential in establishing a valid list of research and development priorities.

The information presented in the following sections describes the procedures used in developing the model, conducting the study, and implementing the findings of the study.

Population and Sample

The population was defined as those persons in Minnesota who had some present professional responsibility in the field of vocational and practical arts education. The mailing list maintained by the Minnesota Research Coordinating Unit, containing about 6,000 names of educators classified in this manner, operationally defined the population.

A disproportional, stratified random sample of the population was utilized. The population was stratified according to educational responsibility (administrator, counselor, teacher, etc.) and by level of educational employment (i.e. elementary, secondary, post-secondary, etc.). In those categories which contained more than 100 members, a fifteen percent sample was taken; the total population was selected from those categories with less than 100 members. The total sample selected numbered 1,059 persons. The number of the sample drawn from each population cell and the percent of returns are shown in Appendix A.

Instrumentation

It was believed that a relatively unstructured instrument would optimize the validity of the study since the responses would likely reflect the research and development needs actually perceived by each respondent. The instrument therefore utilized a two dimensional framework with research-related activities as one axis of the matrix and disadvantaged and non-disadvantaged groups as the other axis. These dimensions were thought to be indicative of the major intents and purposes of the legislation under which the funds to be utilized were provided (Title 1, Parts C and D, Vocational Education Amendments, 1968). The instrument (Appendix B), together with a cover letter and stamped, self-addressed envelope, was mailed to each educator sampled.

Classifying Responses

Responses were tabulated first according to the educational responsibility (position) of the respondent and then according to the content of the statement. That is, keyword descriptors were used to help classify the nature of the response as it related to (a) research and development activities and (b) disadvantaged and non-disadvantaged students. Figure I shows the schema used to classify each response. In addition, the following keyword descriptors were used to describe the nature of the problems identified within each of the eight major categories shown in Figure 1.

(a) Administration and Supervision
(b) Educational Program and Curriculum Development
(c) Facilities and Equipment
(d) Learning Processes and Teaching Methods
(e) Manpower Needs and Employment Opportunities
(f) Student Characteristics
(g) Student Personnel Services
(h) Teacher Education

Figure I

RESPONSE CLASSIFICATION SCHEMA

	Disadvantaged	Non-disadvantaged
Research		
Development		
Dissemination		
Evaluation		

The frequency of responses in each of the eight major categories was tabulated. Comparisons of the response distributions were made in order to determine whether practitioners (a) placed more emphasis on the conduct of research than on the conduct of developmental activities or (b) were more concerned with disadvantaged than non-disadvantaged students. A master list of the categorized responses, together with the identification of specific problem areas within each major category, are shown in Appendix C. (The rank order, in parentheses, shown within each of the categories was based on frequency or responses.)

FINDINGS AND CONCLUSIONS

The data collected by the survey are summarized in Appendix C. An examination of the distribution of responses and the rank order of priorities reveals the following:

1. Only about one-fifth of the vocational educators in the state had strong enough concerns about research and development needs to respond to the initial mailing of the questionnaire.

2. Practitioners who responded recognize slightly more research needs than development needs and are slightly more concerned with the disadvantaged student than the non-disadvantaged student.

3. Responding practitioners have a very limited perspective of "developmental" activities; their definition includes primarily the development of programs and curricula.

4. Although the questionnaire did not specifically request suggestions for dissemination and evaluation activities, some respondents recognized a need for these kinds of efforts.

A breakdown of specific problem areas volunteered by respondents within each of the research and development categories is as follows:

1) Research Priorities - Disadvantaged
   a. Student Characteristics
   b. Educational Programs and Curriculum Development
   c. Manpower Needs and Employment Opportunities
   d. Learning Processes and Teaching Methods

2) Research Priorities - Non-disadvantaged
   a. Educational Programs and Curriculum Development
   b. Student Characteristics
   c. Manpower Needs and Employment Opportunities

3) Developmental Priorities - Disadvantaged
   a. Educational Programs and Curriculum Development

4) Developmental Priorities - Non-disadvantaged
   a. Educational Programs and Curriculum Development

The findings for the total sample disclosed a surprising consensus among respondents in identifying major research and development problem areas. From a list of nine possible problem areas, the respondents focused on only four. The agreement on problem areas for developmental priorities was even more sharply evident, with strong emphasis given only to Educational Programs and Curriculum Development.

It was deemed important to know if the various groups comprising the sample (i.e., administrators, counselors, teachers, etc.) were responding alike or if they possessed differential viewpoints corresponding to the position they held. Consequently, the two groups assumed to be most unlike each other in responses (administrators and teachers) were examined separately and the findings compared. The results showed no differences in the general patterns of responses between teachers and administrators; they were in agreement in their perceptions of the research and development needs of vocational education.

IMPLEMENTING THE FINDINGS

The priorities which were identified as a result of this study were used as a major source of input for developing statements of long and short range research-related objectives for the state. A Research and Development Review Committee, consisting of persons representing various agencies interested in vocational education, (i.e. manpower services, state planning commission, junior colleges, State Department of Education, etc.), considered the findings of the study, and, in conjunction with knowledge about such things as State Advisory Council concerns and ongoing research and development activities in the state and nation, developed a list of priorities which was used as a basis for making decisions about utilizing research monies during FY 1970. The priorities as established by the Review Committee are shown below.

1. a. Develop a method for securing, and then secure, an inventory of the occupational education needs of all people in the State.

   b. Devise a system for utilizing student need and occupational demand data to plan occupational programs at the state and local levels.

2. a. Develop a procedure for predicting, and then predict, occupational demand in a form useful for program planning.

   b. Secure continuous data about applicants to vocational programs, their progress in the programs, and their performance after leaving the programs.

   c. Devise methods for improving the curriculum development process.

3. a. Devise a system for improving guidance-selection practices and improving the quality and efficiency of vocational programs (using data about applicants).

4. a. Develop a method for securing, and then secure, an inventory of the occupational education needs of the handicapped and disadvantaged (16 years and older).

   b. Determine whether "disadvantaged" students (of various kinds) require different instructional treatments from other students, and if so, the best way to treat them.

   c. Secure data about the disadvantaged that will permit the selection of the most appropriate treatments.

5. a. Develop a procedure for predicting, and then predict, occupational demand (focusing on the disadvantaged and handicapped, 16 years and older) in a form useful for program planning.

   b. Define the nature and purpose(s) of (a) career education programs, (b) pre-vocational programs, (c) orientation to work programs, etc.

Appendix A

SUMMARY OF RETURNS

Sample Drawn	Percent Return	Categories Within the Population
		Administrators
7	14%	Presidents - Junior, Private, and State Colleges
56	20%	Superintendents - School Districts
96	18%	Principals - Junior and Senior High Schools
		Teacher Educators
59	17%	Vocational Division Personnel - U of M and UMD
25	20%	State Colleges
19	16%	Heads and Instructors, Home Ec. Depts. - Minnesota Colleges
		State Department
23	13%	Vocational Division
13	15%	Vocational Rehabilitation
27	44%	Area School Directors
		Instructors, Counselors and Coordinators
24	21%	Counselors - Area Vocational-Technical Schools
128	21%	Counselors, High School - Jr. and Sr. High School
31	29%	Coordinators
135	07%	Home Economics Instructors - Jr. and Sr. High School
49	06%	Vocational Agriculture Instructors
107	10%	Vocational Instructors - Area Vocational-Technical Schools
218	11%	Industrial Arts Instructors - Jr. and Sr. High Schools
42	12%	Instructors - Related Subjects - Area Vocational-Technical Schools, State and Junior Colleges
1059	20%	

Appendix B

A SURVEY OF OPINIONS REGARDING THE NEEDS FOR RESEARCH AND DEVELOPMENTAL ACTIVITIES IN VOCATIONAL EDUCATION PROGRAMS IN MINNESOTA

Name _____

Place of Employment _____

Area of Responsibility _____
(Position)

Directions for Responding to the Questionnaire:

Please respond to each item below as candidly as you can. Indicate what you believe are the research and/or developmental activities needed in each of the areas listed. If you need more space for your reply please use the back of this sheet and/or add additional sheets. Any comments you have are welcome.

In order to promote commonality among the meanings given to the terms research and development the following definitions are given: Research activities consist of collecting and interpreting original data in order to answer pertinent questions and/or provide information (the end result of research is knowledge); developmental activities consist of modifying existing programs, processes, or products, or designing new ones. The end results of developmental activities are products which are immediately usable and operational.

Please utilize the foregoing definitions when responding to the following questions. If in doubt as to which category to use, put your response in either one.

I. In your opinion, what research activities in vocational education in Minnesota should be undertaken pertaining to:

Disadvantaged persons _____

_____

Non-disadvantaged persons _____

_____

II. In your opinion, what developmental activities in vocational education in Minnesota should be undertaken pertaining to:

Disadvantaged persons _____

_____

Non-disadvantaged persons _____

_____

Appendix C

SUMMARY OF RESPONSES AND RESEARCH PRIORITIES

	Disadvantaged - Research (N - 186)	
	Administration & Supervision	4
(2)	Educ. Prog. & Curriculum Development	40
	Facilities & Equipment	1
	Instructional Materials & Devices	2
(4)	Learn. Process. & Teaching Methods	23
(3)	Manpower Needs & Employment Oppor.	29
(1)	Student Characteristics	71
(5)	Student Personnel Services	13
	Teacher Education	3

	Disadvantaged - Developmental (N - 137)	
	Administration & Supervision	5
(1)	Educ. Prog. & Curriculum Development	92
	Facilities & Equipment	5
	Instructional Materials & Devices	5
(2)	Learn. Process. & Teaching Methods	14
	Manpower Needs & Employment Oppor.	0
	Student Characteristics	3
	Student Personnel Services	7
	Teacher Education	6

	Disadvantaged - Dissemination (N - 6)	
	Educ. Prog. & Curriculum Development	4
	Manpower Needs & Employment Oppor.	2

	Disadvantaged - Evaluation (N - 9)	
	Educ. Prog. & Curriculum Development	6
	Learn. Process. & Teaching Methods	2
	Manpower Needs and Employment Oppor.	1

	Non-Disadvantaged - Research (N - 132)	
	Administration & Supervision	0
(1)	Educ. Prog. & Curriculum Development	47
	Facilities & Equipment	3
	Instructional Materials & Devices	0
(4)	Learn. Process. & Teaching Methods	11
(3)	Manpower Needs & Employment Oppor.	23
(2)	Student Characteristics	33
(4)	Student Personnel Services	11
	Teacher Education	4

	Non-Disadvantaged - Developmental (N - 123)	
	Administration & Supervision	5
(1)	Educ. Prog. & Curriculum Development	84
	Facilities & Equipment	4
	Instructional Materials & Devices	4
	Learn. Process. & Teaching Methods	5
	Manpower Needs & Employment Oppor.	2
	Student Characteristics	1
(2)	Student Personnel Services	10
	Teacher Education	8

	Non-Disadvantaged - Dissemination (N - 11)	
	Educ. Prog. & Curriculum Development	4
	Learn. Proc. & Teaching Methods	2
	Manpower Needs and Employment Oppor.	2
	Student Personnel Services	2
	Teacher Education	1

	Non-Disadvantaged - Evaluation (N - 12)	
	Educ. Prog. & Curriculum Development	12

RESEARCH PRIORITIES FOR VOCATIONAL EDUCATION: 1970-71

Brandon B. Smith and David L. Passmore

THE STUDY

This is the second study conducted by the Minnesota Research Coordinating Unit for Vocational Education to develop and test a procedure for identifying the research-related priorities expressed by practitioners in vocational and practical arts education. The rationale for the study is that practitioners should have a role in identifying significant problem areas; the assumptions that need testing are whether (a) educational practitioners are willing to and capable of identifying significant educational problems which require the conduct of research and development activities, and (b) an objective method can be developed to translate, code and analyze their statements and then develop a composite list of priorities.

Objectives

In order to test the two basic assumptions noted above, the study sought answers to the following specific questions:

1. Is the method for classifying the research-related priorities expressed by groups of practitioners reliable?

2. Are there differences between groups of practitioners who have expressed an interest in engaging in research and development activities and practitioners who have not expressed such an interest in terms of the distribution of their expressed research-related priorities?

3. Are there differences among groups of practitioners who are employed as teachers, counselors and administrators in terms of the distribution of their expressed research-related priorities?

4. Are there differences among groups of practitioners employed in elementary-junior high schools, secondary schools, post-secondary schools and colleges in terms of the distribution of their expressed research-related priorities?

5. Can a meaningful composite list of research-related priorities be developed for the total group of practitioners?

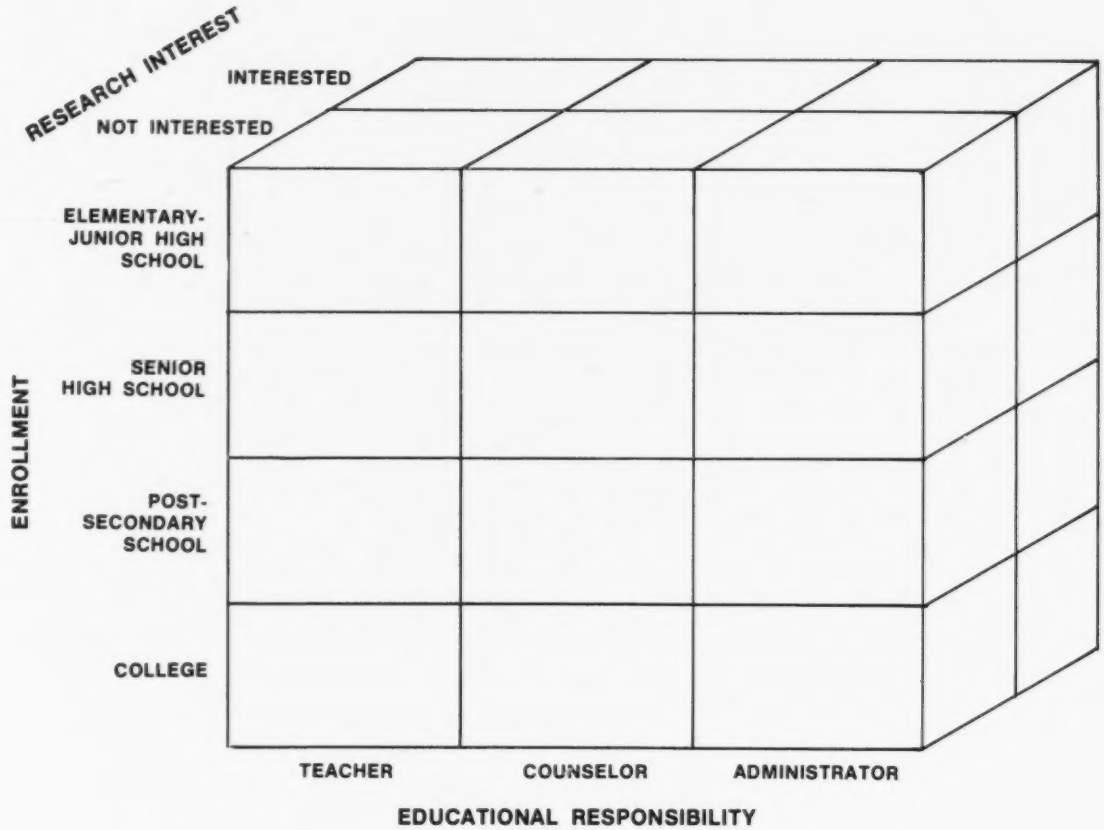
Population and Sample

The population was defined as all educators who have some professional responsibility in the field of vocational and practical arts education and who are employed in either public or private elementary, junior high, senior high, post-secondary schools, or colleges in Minnesota during the fall of 1970. The mailing list maintained by the Minnesota Research Coordinating Unit for Vocational Education (Minnesota RCU) was used to identify the names of all persons in the population. The three dimensional matrix shown in Figure 1 was used to classify the total population according to (a) research interest, (b) educational responsibility, and (c) employment level. The population in each cell was grouped according to area zip code and a disproportionate random sample was selected from each cell.

The results of a previous study, "Assessing the Human Resources for Conducting Research and Development Activities in Minnesota", were used to classify members of the population in terms of those who had or did not have an interest in conducting research or acquiring further research training.

Figure 1

TOTAL POPULATION



Instrumentation

A stamped, self-addressed, business reply card questionnaire (Appendix A) was used to collect data. The business reply card was accompanied by a cover letter which explained both the purpose of the study and the directions for making responses. Correspondence was mailed during the first week of November 1970, and respondents were asked to promptly return the questionnaire. Since responses from only those persons who were willing and capable of identifying significant research problems was desired, non-respondents were viewed as "disinterested" and were not followed-up.

Each practitioner was asked to list, in rank order of importance, not more than five long-range problems facing the field of vocational education and they were asked to be explicit with respect to (a) problem area, (b) vocational mission, (c) type of student, and (d) subject matter field for each problem stated.

Responses were received from the second week of November 1970 through February, 1971. Each individual problem statement given by a respondent was (a) interpreted by the investigator, (b) written on a computer card, and (c) coded according to a predetermined classification system (Appendix B). By writing each statement and keypunching the respective codes on separate computer cards, responses could be readily manipulated without losing the structure (meaning) of the original responses.

Respondents were coded according to their research interest, employment level, and educational responsibility and these codes were punched on the computer cards containing their respective responses. Responses were classified in terms of the following five categories: (a) the problem area specified, (b) the type of students described (minority, disadvantaged, etc.), (c) the purpose or goal of the instructional program (preparatory, upgrading, etc.), (d) the subject matter with which the R & D problem dealt, and (e) the type of product that would be needed to solve the problem (information, course of study, etc.).

Data Collection

Table 1 shows the size of the population and sample for each kind of practitioner group, together with the number and percent of returns, respectively. Thirty-three percent (33%) of the total population was sampled and only about fifteen percent (15%) of those sampled responded to the questionnaire. A test of significance dealing with the proportion of returns was conducted and the findings reveal that: (a) persons who had expressed an interest in research had a significantly higher response rate than persons who had not expressed an interest in research; (b) the proportion of returns from persons employed in colleges is significantly lower than educators employed at other levels; and (c) both counselors and administrators have a higher response rate than teachers. In general, it may be concluded that while the percent of return for the study was low, some groups of practitioners (i.e., research interested, administrators and counselors) are more willing to express their ideas about research priorities than are other groups.

Table 1

SIZE OF POPULATION AND SAMPLE AND THE NUMBER OF RETURNS FROM THREE GROUPS OF PRACTITIONERS

Practitioner Group	Population	Sample	Return
RESEARCH INTEREST			
Interested in Research	797	399 (50%)	76 (19%)
Not Interested in Research	5,953	1,813 (30%)	250 (14%)
TOTAL	6,750	2,212 (33%)	326 (15%)
EMPLOYMENT LEVEL			
Elementary-Junior High School	1,209	325 (27%)	42 (13%)
Senior High School	4,123	1,164 (29%)	195 (17%)
Post-Secondary School	1,104	439 (40%)	66 (15%)
College	314	284 (90%)	23 (8%)
TOTAL	6,750	2,212 (33%)	326 (15%)
EDUCATIONAL RESPONSIBILITY			
Teacher	4,299	1,423 (33%)	143 (10%)
Counselor	1,099	313 (28%)	80 (26%)
Administrator	1,352	476 (35%)	103 (22%)
TOTAL	6,750	2,212 (33%)	326 (15%)

Data Analysis

Both descriptive statistics and non-parametric inferential tests of significance were used to analyze the data. Descriptive statistics concerning frequency of responses, percent of responses, and rank order of research priorities are presented in table form. Non-parametric tests of proportion were used to determine whether there were statistically significant differences between and/or among groups of practitioners. A two sample binomial test of proportions was used to determine whether the proportion of returns was different for various groups of practitioners.

The Large, Two-Sample Kolmogorov-Smirnov Test was used to determine whether groups of practitioners differed with respect to the distribution of their expressed research priorities. This statistical technique (Beyer, 1968, pp. 427-29) tests the null hypothesis that two samples have been drawn from the same population or from populations having the same distribution. Used in this study, the test assesses whether two groups of practitioners have distributed their responses among R & D problem areas in the same manner. By comparing the largest difference (K_D value) in the cumulative percent distribution for two groups with the predetermined level of significance, it is possible to test whether differences in the distribution of priorities for two groups of practitioners may or may not be attributed to chance. Tables showing the largest observed K_D value and the probability level associated with each value are used to summarize each of the statistical tests.

FINDINGS

Question #1: Is the method for classifying the research-related priorities expressed by groups of practitioners reliable?

In order to determine whether the method used to identify research-related priorities was reliable, three raters were asked to classify a sample of responses according to the predetermined set of directions contained in Appendix B. The sample consisted of fifteen (15) responses randomly selected from the total responses received. To the extent that the amount of agreement in identifying and classifying the responses was high, the method could be considered reliable. Conversely, lack of agreement would indicate that the method was not reliable in terms of classifying certain types of responses.

Results showed that raters were in general agreement in identifying the problem area specified in each of the fifteen statements. However, when asked to categorize the type of product (e.g. information) needed to solve each problem, there was considerable disagreement among the raters. When the program missions, types of students, or vocational field were judged, raters were able to agree on their classification. Unfortunately, problem statements from respondents did not often contain the latter types of information. The lack of specificity of respondents in these categories was noted as a general trend throughout the entire set of responses.

It seemed that the most salient and reliably categorized aspect of each response was the problem area. While this provided rather gross information

about research priorities, it represented the best available data and was therefore used to make comparisons among groups of practitioners in terms of the frequency and distribution of their responses to the following seven categories of problem areas:

1) Curriculum Development
2) Program Planning
3) Evaluation
4) Counseling, Selection and Placement
5) Staffing
6) Public Relations
7) Instruction

Question #2: Are there differences between groups of practitioners who have expressed an interest in research and development activities and practitioners who have not expressed such an interest in terms of the distribution of their expressed research-related priorities?

Table 2 shows the frequency distribution, the cumulative percent distribution and the difference (K_D value) in cumulative percent for each of seven problem areas for a group of practitioners who have expressed an interest in research and a group who have not expressed an interest in research. The largest difference between the two distributions ($K_{D_{max}}$ = .1712) is statistically significant beyond the .001 level (a K_D value as large as .1712 would occur by chance only one time in a thousand). This indicates that practitioners who express an interest in research have a different distribution of priorities than practitioners who had not expressed an interest in research. Subsequent research analyses showed that the exact nature of the difference is within the problem areas of curriculum development and program planning. These differences are illustrated in the composite list of research priorities for all groups of practitioners shown in Table 5.

Question #3: Are there differences among groups of practitioners who are employed as teachers, counselors and administrators in terms of the distribution of their expressed research-related priorities?

The Kolmogorov-Smirnov statistical test was used to determine whether there were differences among teachers, administrators, and counselors in terms of their distribution of research priorities. Table 3 shows the largest observed K_D value and probability level associated with the value for the three groups of practitioners. Since none of the K_D values were statistically significant, it can be concluded that all the practitioner groups have the same distribution of research priorities.

Table 2

FREQUENCY AND CUMULATIVE PERCENT DISTRIBUTIONS OF RESPONSES IN SEVEN R & D PROBLEM AREAS FOR RESPONDENTS INTERESTED IN RESEARCH AND FOR RESPONDENTS WITH NO EXPRESSED RESEARCH INTEREST

Rank-Ordered Problem Areas	Interested in Research		No Research Interest		K_D Value (difference between proportions)
	Frequency Distribution	Cumulative Proportion	Frequency Distribution	Cumulative Proportion	
1) Curriculum Development	88	1.0000	180	1.0000	.0000
2) Program Planning	31	.5056	177	.6768	.1712 *
3) Evaluation	12	.3315	54	.3591	.0276
4) Counseling, Selection, Placement	19	.2640	41	.2621	.0019
5) Staffing	11	.1573	43	.1885	.0312
6) Public Relations	10	.0955	35	.1113	.0158
7) Instruction	7	.0393	27	.0485	.0092
TOTALS	$N_1 = 178$		$N_2 = 557$		

* $p < .001$. All other p-values $> .10$.

Table 3

KOLMOGOROV-SMIRNOV COMPARISONS AMONG GROUPS OF PRACTITIONERS HAVING DIFFERENT EDUCATIONAL RESPONSIBILITIES

Educational Responsibility		
Teacher versus Counselor	Teacher versus Administrator	Counselor versus Administrator
$K_D = .1294$	$K_D = .0095$	$K_D = .921$
$p > .10$	$p > .10$	$p > .10$

Question #4: Are there differences among groups of practitioners employed in elementary-junior high schools, senior high schools, post-secondary schools and colleges in terms of the distribution of their expressed research-related priorities?

Table 4 shows the K_D values and probability levels associated with the Kolmogorov-Smirnov Test for four groups of practitioners employed at different levels of education. Results of these tests revealed that practitioners in elementary-junior high schools, senior high schools, post-secondary schools, and colleges did not perceive the R & D priorities differently.

Table 4

KOLMOGOROV-SMIRNOV COMPARISONS AMONG GROUPS OF PRACTITIONERS EMPLOYED AT FOUR DIFFERENT LEVELS OF EMPLOYMENT

Level of Employment					
Elementary-Junior High versus			Senior High versus		Post-Sec. versus
Sr. High	Post-Sec.	College	Post-Sec.	College	College
$K_D = .107$	$K_D = .0926$	$K_D = .2225$	$K_D = .0734$	$K_D = .1048$	$K_D = .1199$
$p > .10$	$p > .10$	$p > .10$	$p > .10$	$p > .10$	$p > .10$

Question #5: Can a meaningful composite of research-related priorities be developed for the total group of practitioners?

Limitations are imposed on this question because of the answers to previous research questions. It was noted that because limited information was received from respondents and there was generally low inter-rater agreement in categorizing certain response dimensions, research priorities were specified for only the seven problem areas for which there was high inter-rater agreement. In addition, since practitioners who expressed an interest in research had different research priorities than practitioners who did not express an interest in research, it is possible that these groups may not be meaningfully combined. Table 5 shows the composite rank-ordered list of research priorities. It also shows the differences within the curriculum development and program planning problem areas for the groups of practitioners who had and who had not previously expressed research interests.

Table 5

A COMPOSITE LIST OF RESEARCH PRIORITIES FOR GROUPS OF PRACTITIONERS SHOWING DIFFERENCES BETWEEN PRACTITIONERS WHO ARE AND ARE NOT INTERESTED IN RESEARCH

Problem Areas	Interested in Research	Not Interested in Research	Composite
	N = 178	N = 180	
I. Curriculum Development			
A. No subject matter specified			
1) in general terms	42	86	128
2) for disadvantaged and handicapped	8	17	25
B. Subject matter areas specified			
1) career development	26	21	47
2) agricultural education	5	11	16
3) trade and industrial education	3	10	13
4) industrial arts	2	10	13
5) home economics	1	8	9
6) work experience	-	8	8
7) business education	-	5	5
8) health occupations	-	4	4
Sub-total	88	180	268
% of Total Responses	49%	32%	
II. Program Planning			
A. Survey the manpower needs of industry for future years	5	46	51
B. Give thought to the philosophical problems in vocational education	5	28	33

Table 5 (continued)

Problem Areas	Interested in Research N = 178	Not Interested in Research N = 180	Composite
C. Obtain more facilities and equipment to support vocational education programs	7	26	33
D. Determine how to obtain reimbursement	3	25	28
E. Coordinate various levels of vocational education programs	-	13	13
F. Determine how to implement vocational education skill centers	3	10	13
G. Determine how to schedule classes more efficiently	-	12	12
H. Increase the interaction between practitioners and the State Department of Vocational Education	-	10	10
I. Determine how vocational education can become more responsive to the needs of minority groups and handicapped people	2	7	9
J. Improve communication among educators at all levels of vocational education	6	-	6
Sub-total	31	177	208
% of Total Responses	17%	31%	
III. Evaluation			
A. Evaluate vocational curricula			36
B. Follow up graduates of vocational programs			14
C. Develop instruments to evaluate student performance			10
D. Conduct cost/effectiveness studies in vocational education			4
E. Determine transfer of credit from AVTS to colleges			2
Sub-total			66
IV. Counseling, Selection and Placement			
A. Improve the methods of selecting students for vocational programs			27
B. Establish better vocational guidance procedures and information bases			21
C. Improve job placement techniques			12
Sub-total			60

Table 5 (continued)

Problem Areas	Interested in Research	Not Interested in Research	Composite
V. Staffing			
A. Provide in-service training to upgrade practitioners' understanding of and competencies in vocational education . . .			34
B. Identify methods to recruit, select, and retain staff			15
C. Improve teacher training programs			5
Sub-total			54
VI. Public Relations - (improve the image of vocational education with the public)			45
Sub-total			45
VII. Instruction			
A. Provide information concerning effective teaching techniques			19
B. Develop and provide information about instructional materials			15
Sub-total			34
TOTAL RESPONSES			735

Based on the frequency of response, the composite rank ordered list of research priorities for vocational education are as follows: (1) Curriculum Development; (2) Program Planning; (3) Evaluation; (4) Counseling, Selection and Placement; (5) Staffing; (6) Public Relations; and (7) Instruction.

The differences between practitioners who are interested in research and those who are not interested in research lie in two areas: curriculum development and program planning. It appears that practitioners who are interested in research are more concerned with the problems related to curriculum development than they are with the problem of program planning. On the other hand, practitioners who did not express an interest in research are equally concerned with the planning of vocational programs as they are with developing curriculum materials for these programs. While it is meaningful to note that these two groups differed with respect to the distribution of their responses, these differences have relatively little effect on the overall composite structure. It does, therefore, appear that practitioners are relatively homogeneous with respect to the expressed research priorities and that a meaningful composite list of priorities can be developed.

CONCLUSIONS AND RECOMMENDATIONS

A summary of the findings of this study yield the following answers to the five research questions originally posed: (a) the method used to classify research priorities was able to reliably identify only broad problem areas; (b) with the exception of those respondents who expressed an interest in research and those not expressing an interest in research, practitioners were relatively homogeneous with respect to distribution of their expressed research priorities; and (c) it is possible to develop a meaningful composite list of research priorities for practitioners regardless of their education responsibilities and level of employment.

Based on these answers and other evidence presented by the findings, the following conclusions may be drawn and recommendations made:

1. <u>The instrument and the cover letter used in the study were not effective in motivating practitioners to accurately express their ideas about research priorities</u>.

Only about fifteen percent of all practitioners who were sent a questionnaire responded. The relatively low percent of returns may be due to (a) the complexity of the questionnaire and the directions for making responses or (b) practitioners, in general, are either not interested in identifying research priorities or they do not have the background experience to make comprehensive statements about research problems. Either of these explanations may be plausible, but additional research is required in order to determine which one is most correct.

It was also obvious that some groups of respondents are more willing to make a response concerning research priorities than are other groups. For example, practitioners who expressed an interest in research provided significantly more responses than practitioners who did not express an interest in research. In addition, administrators and counselors tended to provide more responses than teachers. This conclusion has implications for future investigations dealing with groups of practitioners.

2. <u>A majority of practitioners are in apparent need of research materials that will assist them in improving the quality of their programs and do not know that some of it is already available</u>.

Approximately one-half of the respondents indicated that more information (i.e. characteristics of students, curriculum development techniques, program evaluation, career development, etc.) was needed about specific problem areas. Since many of these materials are available in the Research Coordinating Unit library, copies of appropriate documents should be sent to each of the respondents who requested published material. It seems apparent that additional work must be done in (a) identifying the information needs of practitioners, and (b) disseminating appropriate materials to them.

3. Practitioners are relatively homogeneous with respect to the distribution of their expressed priorities and a meaningful composite list of research-related priorities may therefore be developed.

There were almost no differences among teachers, counselors, or administrators in terms of the distribution of their expressed research-related priorities. In addition, it was shown that there were no differences among practitioners who were employed at different levels of education (elementary, secondary, post-secondary, or college) in terms of the distribution of their expressed research priorities. Practitioners, regardless of educational position or level of employment, seem to have similar perceptions of research-related priorities. The only difference that was observed was for groups of practitioners who expressed an interest in research and those who had not expressed an interest in research, but this difference had little affect on the overall structure of the composite priority list.

4. Alternative methods for identifying research-related priorities for the State should be explored.

If it is desirable to base the research-related priorities of the State wholly or partially on the opinions of practitioners, methods must be developed to obtain their assistance. It may be that personal contact through interviewing would be a more effective method of obtaining cooperation from practitioners than the questionnaire technique. Other alternatives would be to (a) develop a more objective instrument to which it would be easier to make a response, (b) provide respondents with incentives for cooperating, or (c) solicit the assistance of only those groups of practitioners who are most likely to cooperate (i.e., persons interested in research).

Another alternative strategy is to disregard the opinion of practitioners as a total group, and solicit the assistance of a purposive sample of educators who are employed in key roles. But while this latter method may provide ready data about research priorities, it may not accurately reflect the need for research and other research-related activities in the State.

5. A consistent methodology for determining research-related priorities for the State should be adopted.

Adoption of a consistent methodology for identifying research-related priorities would facilitate their comparison annually and would assist in identifying trends and changes over time. In addition, it is likely that consistent, comparable data about research-related priorities would enhance the implementation of "managed research" and the planning and evaluation of programmatic research activities within the State.

REFERENCES

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Appendix A

BUSINESS REPLY CARD QUESTIONNAIRE

AFTER READING THE COVER LETTER COMPLETE ALL ITEMS

Name _____
(Last) (First)

Office Address _____
(Name of School) (City) (Zip Code)

Check one item from each of the following two catagories which best describes your present job:

1. ☐ Elementary - Jr. High ☐ Secondary ☐ Post Secondary ☐ College
2. ☐ Agriculture ☐ Business ☐ Distributive ☐ Health ☐ Home Economics ☐ Industrial Arts ☐ Trade and Industry ☐ Counseling ☐ Administration

Directions: Write in rank order of importance not more than five statements of long range problems facing vocational education. In each statement try to indicate; a) the relevant problem area, b) kind of students involved, c) type and d) field of program, and e) activity or product desired.

1. _____
_____
_____

2. _____
_____
_____

3. _____
_____
_____

4. _____
_____
_____

5. _____
_____
_____

(Continued on Reverse Side)

Appendix B

METHOD FOR CLASSIFYING RESPONSES FOR THE RESEARCH PRIORITIES STUDY

There are five categories in the proposed model. Each category is mutually exclusive and exhaustive and may be used to represent one vital aspect of an operating vocational program.

1. Problem Area: The specific problem encountered by practitioners while working in or dealing with an operating vocational program.

2. Students: Specification of the type of student (e.g. handicapped, disadvantaged, minority, etc.) to be served by the program for whom the problem is most relevant.

3. Program Mission: The purpose or instruction goal of a given type of vocational program (e.g. preparatory, orientation, upgrading, etc.). This refers to the reason for developing and offering a program in an area considered most relevant to the educational objectives for various levels of education.

4. Vocational Field: The subject matter content or discipline in which the practitioner perceives the greatest need for improvement.

5. Product: A specification of the output or of needs perceived by the practitioner to obtain a solution to the specific problem (e.g. obtain information, develop instruction, establish a system, etc.). This involves recommending a solution to the problem.

Procedures (Classify each response according to all five categories)

1. Study the model and its five major categories. Become familiar with the specific elements within each category.

2. Read the problem statement of each respondent.

3. Select those keywords in the model which classify the response adequately and record the appropriate keyword on the sheet provided.

4. In the absence of an appropriate keyword, classify the response according to the most general category provided and assign the appropriate keyword number. Example: If a response makes no reference to a specific type of student or a specific field of study, the categories "all students" and "all fields" should be used and numbers "6" and "7" would be assigned respectively. NOTE: Each response must be classified into all five categories.

5. Proceed to the respondent's next response and repeat steps 1-4 above.

6. Do not discuss your ideas with colleagues since this may bias your responses. After you have classified all the statements, return this material together with your responses to me. Your cooperation is appreciated.

CURRENTLY AVAILABLE PUBLICATIONS

OF THE

MINNESOTA RESEARCH COORDINATING UNIT

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*Smith, B. B. and E. L. Jiloca. The Relationships of Selected Factors to the Occupational-Educational Choices of Twelfth Grade Students. April 1971.

*Wheeler, D. Technical Report No. 5: Measuring Job Relatedness. June 1971.

*Kreutzkampf, J. and C. Kiefer. Status of Vocational Education Research and Development Activities in Minnesota 1968-1970: An Annotated Bibliography. June 1971.

*[Several editions of a newsletter, News and Reviews, are also available.]

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*Single copies of these publications are available, free of charge, from the Minnesota Research Coordinating Unit for Vocational Education. The other publications listed are available in either hardcopy or microfiche form from Central ERIC.